

*Functions are an extremely important tool in mathematics and have an abundance of use in the real world. Students will be able to learn how to show functions graphically and algebraically, and also be able to evaluate them. Students will be able to test for outputs using inputs and be able to show the relationship, arguing that a function is a rule. The students will learn this information and be formatively assessed using tools like Google Earth, Glogster, and iMovie. Using angle measurements and lengths students will be able to perform tasks like finding the slope of their favorite ski resort in North America and designing a balcony for Marriott Hotels across the country.*

*Algebra*

*Mount Blue High School*

*RSU 9*

*Function, Slope, Linear equation, Graph*

*Functions*

*Grade 8*

*Ashley Godbout*

*Terminology: Slope, linear equation, linear function, x-cordinate,*

*y-cordinate, origin, y-intercept form*

*• Formulas: y=mx+b, slope, y-intercept, input/output table*

*• Critical Details: Express relationship between two quantities,*

*interpret components of relationship (slope and y-intercept), tables,*

*understanding graphs*

*show functions can be represented algebraically, graphically and verbally*

*• evaluate slope (m) as the constant of proportion*

*• test for every input into a function so that there is an output*

*• argue a function is a rule*

*• relate linear functions and equations and slope to solve problems and analyze situations*

*• recognize y=mx+b defines a linear function (straight line)*

*Why is there an input for every output when evaluating functions?*

*• How can you solve systems of two linear equations?*

*• How can you explain y=mx+b?*

*• a function is a rule that assigns to each input exactly one output.*

*• functions have properties that can be represented algebraically, graphically, or verbally.*

*• the equation y=mx+b defines a linear function (straight line) and the constant of proportion (m) is the slope.*

***Standards:***

*1. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.*

*2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).*

*3. Interpret the equation y = mx+b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.*

*Common Core Standards*

***Grade Level:*** *8*

***Domain:*** *Functions*

***Cluster:*** *Define, Evaluate,*

*and Compare Functions*

*• Pre-assessment: survey that explores knowledge and skills*

*• Checking for understanding: thumbs up/down, entrance/exit ticket, flag it, onion ring, slap it, quick writes*

*• Timely Feedback: self-assessment, peer feedback, and teacher feedback*

*• Glogster: Create a virtual poster showing how to graph and algebraically express linear functions.*

*• Google Earth: Pick a ski mountain in North America and find it's elevation and distance of trails. Use this information to find the longest and steepest trail the ski mountain offers. Students will use right triangles to find angles and slope.*

*• Comic Life: Choose a city (or two) and graph the population over a large period of time. Interpret the data and turn it into a comic strip story of the cities rise and fall of population. Story should be creative and well thought out.*

*• Podcast: Create a podcast that persuades your audience that a function is a rule. Use examples to argue your point.*

*• iMovie: Write a song or skit that teaches fellow classmates how to solve and analyze linear equations. Record on iMovie and create a music video or short movie.*

*• Prezi: Create a presentation that shows equations of a line and what properties make a linear equation. Show examples that aren't linear equations and include why.*

***Goal:*** *To create and use a linear equation to design and virtually build a balcony that Marriott hotels will use.*

***Role:*** *You are a team of architects who design luxurious decks and balconies for commercial companies and personal real estate.*

***Audience:*** *Members of The Board of Directors of Marriott International Inc.*

***Situation:*** *Marriott is remodeling balconies on their hotels and resorts across the country because current ones are unsafe. They desire a new standard balcony design that is safe and appropriate for their hotels and resorts.*

***Product/Presentation:*** *You will use Excel to create a linear equation and create multiple examples using different dimensions and creating a graph that models your balcony. You will put your information into Google SketchUp and virtually create a 3-D model of what your balcony would like.*

***Standards (Criteria from both rubrics - product and presentation):***

*Product: Neatness and Attractiveness - 10%, Excel Formula - 25%, Sketch - 25%, SketchUp Knowledge and Ability 15%, Functions of Excel - 15%, Time Management/Work Ethic - 10%*

*Presentation: Time Limit - 10%, Preparedness - 25%, Enthusiasm - 15%, Speaks Clearly - 10%, Comprehension - 20%, Stays on Topic - 20%*

*• Time Limit 10%*

*• Preparedness 25%*

*• Enthusiasm 15%*

*• Comprehension 20%*

*• Speaks Clearly 10%*

*• Stays on Topic 20%*

*• Neatness and Attractiveness 10%*

*• Excel Formula 25%*

*• Sketch 25%*

*• SketchUp Knowledge and Ability 15%*

*• Functions of Excel 15%*

*• Time Management/Work Ethic 10%*

*• Oral Presentation*

*• Excel/Google SketchUp*

*Marriott International Inc. is remodeling some of their hotels and resorts across the country and are looking for a new, creative and safe balcony design they can use. They want a team of architects to design a safe balcony using proper measurements and dimensions and want you to provide them with your calculations in Excel. They would also like a virtual design of what the prospective balcony would look like in Google SketchUp. They want you to use Excel to create a linear equation that would create the dimensions of your balcony. They want you to show how different slopes would affect the height of your balcony and how different slopes and angles affect the safety of the balcony. You must put your calculations into Google SketchUp to virtually create a 3-D model of your balcony design. The Marriott has put out an advertisement with their expectations and are going to select a few teams of architects to present their design to members of The Board of Directors. If after submitting your design you are chosen to present, your team must create an 8-10 minute presentation showing your Excel calculations and graph and your virtual design in Google SketchUp. You will be flown to Marriott headquarters in Bethesda, Maryland to present to The Board of Directors. If you prove to them that your design is the safest, most appropriate balcony for their resorts you and your team of architects will be paid accordingly for your design and it will be sent to a company to start building balconies designed by you!*

*• Linear Equations and Functions*

*• Algebra*

*• a function is a rule that assigns to each input exactly one output.*

*• functions have properties that can be represented algebraically, graphically, or verbally.*

*• the equation y=mx+b defines a linear function (straight line) and the constant of proportion (m) is the slope.*

*1. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.*

*3. Interpret the equation y = mx+b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.*

***By what criteria will student products/performances be evaluated?***

***(W)*** *1.1 Students will understand that a function is a rule that assigns to each input exactly one output* ***(Where),*** *Given an input a function gives an output which creates a relationship. Statisticians use functions to analyze populations, profits, etc. and you can use them the same way* ***(Why),*** *Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output* ***(What****)*

***(H)*** *1.2 On the board will be a table where x represents foot length and y represents show size. Students will measure their foot using a ruler or tape measure and figure out their shoe size based on this calculation. They will write these two variables on a sticky note and stick it to the table on the board. This will show an input/output table and show the relationship of our class foot size and shoe size.*

***(E)*** *1.3 Students will know slope, linear equation, linear function, y=mx+b (****Equip****), Students will use a persuasion map to organize their argument why function is a rule. The goal of the podcast is to persuade audience that a function is a rule so this graphic organizer is extremely helpful. Using the think-pair-share method, students will individually brainstorm argument ideas, talk about them in pairs and then have pairs share their ideas (****Explore****), Student will create a podcast arguing that a function is a rule and it will be done in a persuasive format (****Experience****)*

***(R)*** *1.4 Students will use the flag it method to write their ideas, questions and important information to remember by "flagging" it on sticky notes (****Rethink),*** *Self-Assessment using checklist before turning in their podcast that includes arguments and multiple examples as to why a function is a rule* ***(Rethink/Revise),*** *and using a rubric by teacher to score podcast based on relevant arguments and examples explaining input/output and relationships that functions produce. It will also score structural organization and enthusiasm used in the podcast and there will be a length requirement (****Revise****/****Refine****)*

***(E)*** *1.5 Formative Assessment -* ***Pre-Assessment:*** *Survey about what students know about functions,* ***Checking for Understanding****: Flag it and* ***Timely Feedback:*** *Self and teacher* ***(Evaluate****)*

***(T)*** *1.6* ***Tailors:***

***Verbal:*** *Students will be required to write their podcast, or argument, as to why they believe a function is a rule and use examples to support their argument. Then they will have to verbally record this into a podcast.*

***Logic:*** *Students will demonstrate their logic ability when forming the persuasion map to organize their argument.*

***Visual:*** *Scenarios that include functions, input/output charts, graphs, and relationships will be provided to students visually.*

***Musical:*** *The student will have the option to write their podcast as song lyrics. They will have to read it like a poem though.*

***Kinesthetic:*** *The hook activity is kinesthetic because students are measuring their own foot length and then putting their sticky note answers onto the board so the students can visualize an example.*

***Interpersonal:*** *Students will be in pairs and then groups in the think-pair-share activity where they will be forming their argument and thinking of examples that show a function is a rule.*

***Intrapersonal:*** *Students will work individually when they are "flagging" their ideas, questions, and things to remember on sticky notes. They will also show this when they complete the self-assessment check list to make sure they include relevant input/output examples and relationships that functions express.*

***Naturalist:*** *This project allows for a lot of flexibility for the type of examples the student chooses. They could be examples that show environmental planning, death toll of deer throughout 10 winters in Maine, tree population and growth output, etc.*

***(O)*** *1.7 Students will be able to argue that a function is a rule (****Perspective****)* ***Product:*** *Podcast* ***Number of Days:*** *2-3 (****Organize)***

***(W)*** *2.1 Students will understand that functions have properties that can be represented algebraically, graphically, or verbally*

***(Where),*** *representing information in different ways is extremely important for data interpretation and to have variation for visual and logical people* ***(Why),*** *Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions* ***(What****)*

***(H)*** *2.2 Students will receive the same equation and they will pick any x value from -10 to +10 to plug into the equation. When they receive an output value (y-cord) the students will stand on their created coordinate on a coordinate plane that is displayed on the floor using duct tape. No student can have the same x value.*

***(E)*** *2.3 Students will know y=mx+b, slope, y-intercept, understanding graphs (****Equip****), Students will use a cluster as a graphing organizer to plan what functions they want to include in their poster. The teacher will ask a question related to graphs and will then shout "stand up, pair up, share up" and students will discuss the question in pairs (****Explore****), Students will graph and algebraically show functions using Glogster. Students will have to include their input/output tables for each function (****Experience****)*

***(R)*** *2.4 Students will use thumbs up/thumbs to show the teacher if they understand properties of functions and how they can be represented. Graphing and algebraic questions will be asked and students will show a thumbs up for understanding and thumbs down for needs more explanation (****Rethink),*** *Self-Assessment using checklist to evaluate if they are correctly representing the functions they chose* ***(Rethink/Revise),*** *The teacher will use the same checklist the student uses to asses and score this project accordingly (****Revise****/****Refine****),*

***(E)*** *2.5 Formative Assessment -* ***Checking for Understanding****: Thumbs up/thumbs down and* ***Timely Feedback:*** *Self and teacher* ***(Evaluate****)*

***(T)*** *2.6* ***Tailors:***

***Verbal:*** *The cooperative learning exercise involves the class in conversation with each other about the content. The students are also using checklists to assess their own work.*

***Logic:*** *The input and output tables, graphs and expressed function are ways a logical thinker analyzes data.*

***Visual:*** *This project allows students to show functions in multiple ways. This is perfect for a visual learner because seeing the function algebraically might be impossible for one person to interpret, but to see it graphically would make more sense for them.*

***Kinesthetic:*** *The hook activity has students getting up and forming a graphed function with their bodies. Each student represents a coordinate. Together they represent a function.*

***Interpersonal:*** *When students are involved in the cooperative learning experience they are collaborating with their classmates in pairs discussing the question the teacher has given them.*

***Intrapersonal:*** *This project is an individually based project. Students will complete their own work and be scored individually.*

***(O)*** *2.7 Students will be able to show functions can be represented algebraically, graphically, or verbally* ***(Explain)******Product:*** *Glogster* ***Number of Days:*** *2 (****Organize)***

***(W)*** *3.1 Students will understand that the equation y=mx+b defines a linear function (straight line) and the constant of proportion (m) is the slope* ***(Where),*** *Input and output relationships are used every day to see the affect of one set of date on a related set of data For example a microbiologist would use one to predict future fish populations given rising water temperatures* ***(Why),*** *Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output* ***(What****)*

***(H)*** *3.2 Students will use an online website that illustrates a "function machine". On the beginner level the student chooses the input number and it goes through a "machine" that produces an output number. The students can try to figure out the equation or they can create their own. This will illustrate to the students how the process works.*

***(E)*** *3.3 Students will know inputs and output relationships, understanding graphs, slope (****Equip****), Students will use a flow chart pick their topic (city) and collect data to input into their input/output chart. A separate flow chart may be used to organize the comic story. The teacher will pose a question about what students feel or think about their understanding of these relationships that allows them to agree or disagree. They will stand on a value line from 1 to 10, strongly disagree to strongly agree and then fold and discuss with the person across from them (****Explore****), Students will choose a city to collect population data on and interpret using an input and output data chart and putting it into a graph. They will proceed by using Comic Life to create a story about the cities population changes over time (****Experience****)*

***(R)****3.4 To check for understanding the teacher will use the onion ring method to pose questions to the students about their ideas, data collection, formed relationship, and Comic Life knowledge (****Rethink),*** *Students will write a journal entry to be handed in to the teacher that self-assesses the progress on their project and any concerns or questions they want the teacher to address. Students will use peer-assessment using the Two Stars and a Wish method. Students will work in pairs and give each other two positive feedbacks on their progress and one wish they have for their peer to work on. This will help students realize a misunderstanding of input and output relationships they may have* ***(Rethink/Revise)****, The teacher will use a rubric to evaluate the students’ data charts, graphs and Comic Life (****Revise****/****Refine****)*

***(E)*** *3.5 Formative Assessment -* ***Checking for Understanding****: Onion Ring and* ***Timely Feedback:*** *Self, peer and teacher* ***(Evaluate****)*

***(T)*** *3.6 Tailors:*

***Verbal:*** *Students are about to write a journal entry to the teacher expressing their progress on their project and any joys or concerns they may have****.***

***Logic:*** *The flow chart will keep the students thoughts organized and they will be able to express the data in chronological order with the flow chart.*

***Visual:*** *Comic life allows the student to express their data in images, graphs, and tables. They can add pictures of the city and what it might look like based on the period and amount of people living their at the time. The captions used will illustrate what information and concepts the pictures are displaying.*

***Interpersonal:*** *The onion ring activity gets students up and interacting with their many of their peers about their ideas, ideas, data collection, formed relationship, and Comic Life knowledge.*

***Intrapersonal:*** *This is an individual project. Students will do most of the work on their own. They may consult others if they wish but are not forced unless otherwise stated during instruction.*

***Naturalist:*** *The student could pick any city in the world to follow as long as they can find or get a hold of the necessary information. They could pick a town in Northern Maine or San Francisco but when creating their Comic Life they can make up a story how the population affected an animal or plants population. One might create a story where the town runs out of drinking water because the population grows the city's major water source dries up and doesn't replenish so the town ends up a deserted area. The creativity for a naturalist is endless.*

***(O)*** *3.7 Students will be able to test for every input into a function there is one output* ***(Application)******Product:*** *Comic Life* ***Number of Days:*** *4 (****Organize)***

***(W)*** *4.1 Students will understand that the equation y=mx+b defines a linear function and the constant of proportion (m) is the slope* ***(Where)****, Slope is used for building roads, handicap ramps, roofs, and applied to ski mountains, roller coasters, skate ramps, and much more* ***(Why)****, Interpret the equation y = mx+b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear* ***(What****)*

***(H)*** *4.2 The students will begin class by pairing and locating a handicapped ramp either in the school or outside of the school and finding the slope of the ramp. They will use their previous knowledge of triangles and linear equations to complete this task.*

***(E)*** *4.3 Students will know y=mx+b, slope, and y-intercept (****Equip****), Students will use Ticktacktoe to organize their Google Earth findings and calculations. Students work in pairs in a Pair Discussion to explore Google Earth and figure out how to find the measurements and calculations they need. The teacher doesn't give this instruction (****Explore****), Students will pick a ski resort in North and America and use Google Earth to apply elevation and distance of trails to find the slopes of trails on the mountain (****Experience****)*

***(R)*** *4.4 To check for understanding students will write a response to the prompt question 'explain how you solve for slope?'. It's broad so the teacher will be able to grasp how deep of an understanding students have after using the Google Earth tool (****Rethink),*** *Students will use the rubric that will be used to score their product to self-evaluate their progress* ***(Rethink/Revise),*** *The rubric will include draft work completed by the students to find slope using different variables, final work of trail slope calculations, and Google Earth knowledge (****Revise****/****Refine****)*

***(E)*** *4.5 Formative Assessment -* ***Checking for Understanding****: Quick Write and* ***Timely Feedback:*** *Self and teacher* ***(Evaluate****)*

***(T)*** *4.6 Tailors:*

***Verbal:*** *To check for understanding the student responds to the prompt question delivered by the teacher. The expectation is that they write or type their response to the teacher but a request can be made to verbally address the prompt.*

***Visual:*** *Students will use Google Earth to picture the image of the trails and mountain. They will use excel to put their calculations into a spreadsheet that will output a graph that will illustrate the slope of the trails.*

***Kinesthetic:*** *The hook activity has students locating a ramp on school grounds and physically measuring it to find the slope of the ramp.*

***Interpersonal:*** *Students work together to explore Google Earth and how to find calculations and measurements of trails.*

***Intrapersonal:*** *Students will work individually on this project and assess their own work using the same rubric the teacher will use to score their project****.***

***Naturalist:*** *Students that are interested in skiing and winter activities can relate to the project because they can pick any ski mountain and will end up finding the slope of the trails on the mountain.*

***(O)*** *4.7 Students will be able to evaluate slope (m) as a constant of proportion* ***(Interpretation)******Product:*** *Google Earth* ***Number of Days:*** *2 (****Organize)***

***(W)*** *5.1 Students will understand that the equation y=mx+b defines a linear function (straight line) and the constant of proportion (m) is the slope* ***(Where)****, Linear functions model two variables with a constant rate of change. They can be used for temperature conversion, money exchange rates, start up costs of companies, measurement conversions and so much more in our everyday lives* ***(Why)****, Interpret the equation y = mx+b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear* ***(What****)*

***(H)*** *5.2 Students will all receive a thermometer that shows the temperature in Fahrenheit and Celsius. They will work in teams to try to find the conversion equation given the temperature in two ways. When time is complete, the equation will be given (if not given by students) and they will move outside to find the outside temperature in Fahrenheit and use the equation to convert it to Celsius.*

***(E)*** *5.3 Students will know y=mx+b, slope, linear equations and functions, express relationship between two quantities (****Equip****), Students will use a problem solution chart to express possible problems and solutions to linear equations and non-linear equations. The teacher will ask questions about what makes linear equations and how they're defined and students will use the Get one, Give one method to share their ideas with each other (****Explore****), Students with create a Prezi presentation to express equations of a line and reasons why and non-linear equations and why (****Experience****)*

***(R)*** *5.4 Slap It will be used to express linear and non-linear equations and the teams will have to slap which answer based on the given equation (****Rethink),*** *Students will self-asses using a checklist that includes knowledge of equations and the examples thy choose and then a peer will use the same checklist to asses their product* ***(Rethink/Revise),*** *The checklist will turn into a rubric that will be used by the teacher to score student examples and Prezi presentation (****Revise****/****Refine****),*

***(E)*** *5.5 Formative Assessment -* ***Checking for Understanding****: Slap It and* ***Timely Feedback:*** *Self, peer and teacher* ***(Evaluate****)*

***(T)*** *5.6 Tailors:*

***Verbal:*** *The student will have to plan and organize the Prezi presentation. Give one, Get one will also be an opportunity for students to organize their thoughts about linear functions. They may write in sentences or use examples to express themselves.*

***Logic:*** *The problem solution chart has students express possible problems and come up with solution to their problems.*

***Visual:*** *The Prezi allows the student to use visual techniques and text in their presentation.*

***Kinesthetic:*** *Slap it has students divided up into teams and when the teacher puts linear and non linear equations on the bored and the students use fly swatters to slap the correct answer.*

***Interpersonal:*** *The Give One, Get One exercise has students getting up and interacting with the answers to their questions about linear equations and how they're defined. Students will share their Give one side and if their partner has something they don't have then they will right it on their Get one side.*

***Intrapersonal:*** *Students will work on this project individually.*

***(O)*** *5.7 Students will be able to recognize y=mx+b defines a linear function* ***(Self-Knowledge)******Product:*** *Prezi* ***Number of Days:*** *2 (****Organize)***

***(W)*** *6.1 Students will understand that the equation y=mx+b defines a linear function (straight line) and the constant of proportion (m) is the slope* ***(Where)****, One important application of analyzing linear equations is the demand curve. This is a business economics application that shows the willingness or ability for a consumer to by a particular product and is affected by the varying price* ***(Why)****, Interpret the equation y = mx+b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear* ***(What****)*

***(H)*** *6.2 Students will play an online two step equation game to get them thinking about solving these types of problems. The students can decide if they want to play individually, in pairs or in teams. This will be decided based on majority vote.* [*Two step equation game*](http://www.math-play.com/Two-Step-Equations-Game.html)

***(E)*** *6.3 Students will know y=mx+b, slope, y-intercept, input/output table, express relationship between two quantities, interpret components of relationship (slope and y-intercept), graphs (****Equip****), Students will use a Word Web 3 to organize six examples of linear functions they will analyze and solve. Some will be expressed as equations, graphs, tables, and word problems. Mix-Pair-Share will be used to have students talk about how to solve and analyze functions. They will talk to each other like they are teaching them instead of having a conversation (****Explore****), Students will work in teams to evaluate and analyze linear equation and function problems given by the teacher. They will have to create a rap or skit that teaches others to solve such problems and create an iMovie displaying their performance (****Experience****)*

***(R)*** *6.4 Entrance and exit tickets will be used to document student and team progress and to make sure students are all understanding how to solve and analyze their problems (****Rethink),*** *Teams will peer-asses each team's problems using sticky notes to write down if the team proficiently explained how to solve the problems or if they should add more detail. Students will asses themselves using the rubric the teacher will use for individual work and based on their participation during the team problem solving involvement* ***(Rethink/Revise),*** *Students will be scored based on their individual problem work-sheet and will be scored as a team on their final product using a rubric (****Revise****/****Refine****)*

***(E)*** *6.5 Formative Assessment-* ***Checking for Understanding****: Entrance/Exit Tickets and* ***Timely Feedback:*** *5 days* ***(Evaluate****)*

***(T)*** *6.6 Tailors:*

***Verbal:*** *Students will use exit tickets to document their progress and to check understanding on how to solve and analyze their problems. Students will group together in their teams to asses each other's teaching methods to see if they've proficiently taught how to solve the problem; this information is recorded on sticky notes.*

***Logic:*** *Students will be solving linear functions and analyzing them. Some will be expressed as equations, graphs, tables, and word problems.*

***Visual:*** *Students will include pictures and problems on whiteboards and other materials to demonstrate how to analyze or solve. These visuals will be props in the video.*

***Musical:*** *Students can chose to record a music video in iMovie. They will write song lyric and perform their song using necessary props.*

***Interpersonal:*** *This project is to be done in teams or pairs. Students will work together to organize their project (problems) and create their iMovie.*

***Intrapersonal:*** *Students will self-asses their own work using the rubric provided by the teacher. They will also use it to grade how they think their own team did. Students also have to complete their own problem work sheet at the beginning of this project to prove they can solve these equations and functions on their own.*

***(O)*** *6.7 Students will be able to relate linear functions and equations and slope to solve problems and analyze situations* ***(Empathy)******Product:*** *iMovie* ***Number of Days:*** *5 (****Organize)***

*Presentations*

*Performance Task explanation and rubrics*

*6.1 Application of Linear Functions (W); 6.2 Two Step Equation Game (H); 6.3 Word Web 3 (E); 6.4 Self/peer assess (R); 6.5 2 Rubrics (E-2); 6.7 Empathy (O) 5 Days*

*5.1 Linear Functions (W); 5.2 Converting Temperature (H); 5.3 Problem Solution Chart (E); 5.4 Self/peer assess (R); 5.5 Rubric (E-2); 5.7 Self-Knowledge (O) 2 Days*

*4.1 y=mx+b and Slope (W); 4.2 Finding slopes of Ramps (H); 4.3 Ticktacktoe (E); 4.4 Self-assess (R); 4.5 Rubric (E-2); 4.7 Interpretation (O) 2 Days*

*3.1 y=mx+b (W); 3.2 Function Machine Game (H); 3.3 Flow Chart (E); 3.4 Self/peer assess (R); 3.5 Rubric (E-2); 3.7 Application (O) 4 Days*

*2.1 Representing Functions (W); 2.2 Input/Output Machine (H); 2.3 Cluster (E); 2.4 Self-assess (R); 2.5 Checklist (E-2); 2.7 Explain (O) 2 Days*

*1.1 Function is a Rule (W); 1.2 Foot Size Exercise (H); 1.3 Persuasion Map (E); 1.4 Self-Asses (R); 1.5 Rubric (E-2); 1.7 Perspective (O) 2-3 Days*